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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,283	12/23/2003	Takeshi Asakura	3673-0163P	7867

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EXAMINER

WILLIAMS, ROSS A

ART UNIT	PAPER NUMBER
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3713

DATE MAILED: 07/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/743,283

Applicant(s)

ASAKURA, TAKESHI

Examiner

Ross A. Williams

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,5 and 7-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4, 5 and 7-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant's request for reconsideration of the finality of the rejection of the last Office action (dated 12/15/2005) is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 102

Claims 1 and 4 are rejected under 35 U.S.C. 102(e) as being anticipated by Lutz (US 6,592,465).

Regarding claims 1 and 4, Lutz discloses an apparatus for measuring the trajectory of a moving object such as a flying ball. The apparatus consists of multiple cameras, each with an angle of view for photographing a moving ball (Figures 1- 9). Figures 5 and 6 present an arrangement of camera's wherein a first camera 214a will photograph the back portion of the ball, a side camera 212a-d will photograph the back portion, front portion and a side portion, and a third camera 216, that will photograph a front portion of the ball (Figure 6). Lutz discloses that the cameras will be activated to photograph the object upon by a triggering means such as an acoustical or optical sensor (Lutz 5:34 – 42). When the trigger is activated a frame grabber will process many multiple frames of the photographs taken by the many different cameras. When the ball passes into the angles of view of cameras 212a-d the photographs will be taken of the side of the ball but at the same time the same photograph image will also have a image of the back and front portion of the ball. This is especially true if the ball is just moving into or leaving a camera's field of vision or angle of view. As can be further

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seen by Figures 1- 10, Lutz discloses multiple camera view angles that overlap each other. Thus the cameras will also be able to take multiple photographs of the ball in motion simultaneously. Lutz further discloses a calculating portion to calculate the coordinate positions of each ball image. Specifically the computer calculates, using software, using the ball dimensions, the time relationships between the camera images and the geometric relationships between the cameras to calculate the X, Y and Z positions of the ball image (Lutz 9:8 – 30).

Lutz also discloses an embodiment of the apparatus wherein two cameras are positioned behind the launch point at different angles of inclination and multiple cameras that are positioned off to the side of the course. All the cameras have an angle of view wherein the angle of view of a camera can overlap the angle of view of another camera (Figure 1). As the ball proceeds to travel through the multiple fields of view of the cameras, also depending on the initial flight path of the ball, the first camera 14a will photograph the back of the ball, the second camera 14b will also photograph the back of the ball when it passes through its angle of view, and one of the third camera's 12a – 12d will photograph the front of the ball (Figure 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 5, and 7 – 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lutz (US 6,592,465) as applied above, and in view of Nauck (US 5,413,345).

Regarding claims 2 and 5, Lutz discloses various embodiments wherein the cameras are positioned before the launch point, between the launch and drop point and after the drop point (Figures 1 – 10). Lutz however does not specifically state the orientation of the first, second and third cameras in relation to the launch and drop points. Nauck discloses a golf tracking system that uses cameras to track the trajectory of a golf ball. Nauck discloses a golf course that has a target area with multiple targets or potential drop points A – K (Nauck Fig 1). The golf course has multiple locator cameras located behind the tee box area (i.e. launch point), and range cameras located along the sides of the golf course. These cameras are located between the launch and drop point and after the drop points. Nauck also discloses that the locator cameras can be placed at any convenient golf location from which a golf shot can be viewed (Nauck 3:35 – 37). Thus by combining the teachings of Nauck to Lutz an apparatus could be constructed to have various camera arrangements in relations to the launch and drop points on the golf area.

One of ordinary skill in the art would be motivated to modify Lutz in view of Nauck to provide various camera arrangements with respect to the layout of the golf course and the launch and drop points. This would provide greater flexibility in setting up the

tracking cameras on the golf course due to the fact that the system can be adapted to many different courses that are not of an identical layout.

Regarding claims 9 and 10, Both Lutz and Nauck teach systems of tracking the trajectory of a golf ball when hit. Lutz discloses specifically tracking cameras having angles of view that overlap and portions of these views that do not overlap (Lutz Figures 1 – 10). Lutz does not specifically disclose which cameras are responsible for photographing or tracking the trajectory of the ball as it is traveling by the cameras. However, Lutz does disclose a triggering means that activates the cameras to photograph the ball along its given trajectory. Obviously, for a given point in time, the ball will not be in view of every single camera. It will only be in the view of a certain number of cameras. It is even possible at some points in time, for the ball to only be in the view of one camera (Lutz Fig 1). Thus even though all the cameras may be activated to photograph the ball, only the cameras whose view is crossed by the ball at any given point in time will actually photograph the ball. Nauck also discloses a method of tracking a ball as it crosses into different camera views. Nauck describes a method of handing off the tracking responsibilities of the cameras as the ball leaves Nauck also discloses that the locator cameras can be placed at any convenient golf location from which a golf shot can be viewed (Nauck 3:35 – 37). Since Nauck teaches that one can place the tracking cameras in any convenient location, one of ordinary skill in the art could easily construct a setup of camera's wherein at given times during the trajectory of the ball, only the first and second camera, or only the second and third camera or all three cameras are able to photograph the ball.

One of ordinary skill in the art would be motivated to modify Lutz in view of Nauck to provide various camera view arrangements to specify what cameras will photograph the ball's trajectory at a given time. One would be motivated to do so in order to provide a measure of flexibility in adapting the system to different courses as well as provide convenient locations to view a golf shot (Nauck 3:35 – 37).

Regarding claims 7, 8 and 11 Lutz discloses an apparatus for measuring the trajectory of a moving object such as a flying ball. The apparatus consists of multiple cameras, each with an angle of view for photographing a moving ball (Figures 1- 9). Figures 5 and 6 present an arrangement of camera's wherein a first camera 214a will photograph the back portion of the ball, a side camera 212a-d will photograph the back portion, front portion and a side portion, and a third camera 216, that will photograph a front portion of the ball (Figure 6). Lutz discloses that the cameras will be activated to photograph the object upon by a triggering means such as an acoustical or optical sensor (Lutz 5:34 – 42). When the trigger is activated a frame grabber will process multiple image frames of the photographs taken by the many different cameras. When the ball passes into the angles of view of cameras 212a-d the photographs will be taken of the side of the ball but at the same time the same photograph image will also have a image of the back and front portion of the ball. This is especially true if the ball is just moving into or leaving a camera's field of vision or angle of view. As can be further seen by Figures 1- 10, Lutz discloses multiple camera view angles that overlap each other. Thus the cameras will also be able to take multiple photographs of the ball in

motion simultaneously. Lutz further discloses a calculating portion the to calculate the coordinate positions of each ball image. Specifically the computer calculates, using software, using the ball dimensions, the time relationships between the camera images and the geometric relationships between the cameras to calculate the X, Y and Z positions of the ball image (Lutz 9:8 – 30).

Lutz also discloses an embodiment of the apparatus wherein two cameras are positioned behind the launch point at different horizontal angles of inclination and multiple cameras that are positioned off to the side of the course. All the cameras have an angle of view wherein the angle of view of a camera can overlap the angle of view of another camera (Figure 1). As the ball proceeds to travel through the multiple fields of view of the cameras, also depending on the initial flight path of the ball, the first camera 14a will photograph the back of the ball, the second camera 14b will also photograph the back of the ball when it passes through it angle of view, and one of the third camera's 12a – 12d will photograph the front of the ball (Figure 1).

Lutz also discloses a third embodiment of as shown in Figure 9, wherein two cameras are arranged in a vertical arrangement. The limitation of "substantial" is open to a broad interpretation; therefore the two cameras in figure 9 can be viewed as being substantially the same distance and position directly behind the launch point. Lutz does not explicitly disclose the exact upward inclinations of the cameras. In fact the camera inclination angles according to figure 9 appear to be the same and appear to be horizontal. However, Nauck discloses a camera tracking system wherein the cameras can be located in any convenient location for viewing a golf shot (Nauck 3:35 – 37).

Thus it would be obvious to position the cameras in such a way that the upward angles of inclination of the cameras are different.

One of ordinary skill in the art would be motivated to modify Lutz in view of Nauck to position the cameras with differing angles of inclination. One would be motivated to do so in order to provide a measure of flexibility in adapting the system to different courses as well as provide convenient locations to view a golf shot (Nauck 3:35 – 37).

Regarding claim 12, please see discussion above in regards to claim 10.

Response to Arguments

Applicant's arguments filed 6/15/2006 have been fully considered but they are not persuasive.

The Applicant states that Lutz, alone or in combination with Nauck does not show or teach a “correspondence of the coordinates in the angle of view of the first camera to those in the angle of view of the second camera is grasped by the calculating means.” The Examiner respectfully disagrees. The Examiner directs attention to Lutz column 9, lines 8 – 30. Lutz discloses a calculation portion of the system that is able to relate or correspond the position coordinates of the ball image in the angle of view of the cameras to one another in order to accurately predict the flight path and the point of landing of the ball if this portion of the flight is not image.

The Applicant states that Lutz alone or in combination with Nauck does not disclose or teach “the first camera and the second camera are located at substantially

the same distance, at the same elevation and directly behind the launch point said first and second cameras are inclined upward from a horizontal direction, and an angle of inclination of said first camera is greater than an angle of inclination of said second camera.” The Examiner respectfully disagrees. The Examiner directs attention to Figure 1 of Lutz and the above discussion of Figure 1 and how the embodiment relates to the limitations of claims 1, 4, and 7 and in particularly claim 7, in view of newly amended limitation of “same elevation”. Lutz shows in Figure 1 the positioning of two cameras directly behind a launch point and at the sides of the launch points to the left and right. The cameras appear to be at the same elevation and at the same time the “same distance”.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ross A. Williams whose telephone number is (571) 272-5911. The examiner can normally be reached on Mon-Fri 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xuan Thai can be reached on 571-272-7147. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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7/3/06


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TC3700